Amendments to the Specification:

Please amend the subheading on page 2, line 1, as follows:

~~DISCLOSURE~~ SUMMARY OF THE INVENTION

Please amend paragraph [0007] as follows:

[0007] There is provided an electron-emitting element comprising~~:~~ ~~——~~an electric field applying portion composed of a dielectric, ~~——~~a first electrode formed on one surface of this electric field applying portion, ~~–~~a second electrode formed on ~~said~~ the one surface of the electric field applying portion and forming a slit in cooperation with the first electrode.

Please amend paragraph [0012] as follows:

[0012] According to the present invention, not only a good straight advancing ability can be obtained, but also the electric field applying portion ~~also~~ acts as an actuator and is bent and displaced when a pulse voltage is applied to the first or second electrode. As a result, the straight advancing ability of the electron-emitting element is more improved.

Please amend the subheading on page 8, line 14 as follows:

~~BEST MODE FOR CARRYING OUT~~DETAILED DESCRIPTION OF THE INVENTION

Please amend paragraph [0041] as follows:

[0041] A dielectric being comparatively high, for example, not less than 1000 in relative dielectric constant is preferably adopted as a dielectric forming the electric field applying portion 1. As such a dielectric, there can be mentioned ceramic containing barium titanate, lead zirconate, magnesium lead niobate, nickel lead niobate, zinc lead niobate, manganese lead niobate, magnesium lead tantalate, nickel lead tantalate, antimony lead stannate, lead titanate, barium titanate, magnesium lead tungstate, cobalt lead niobate or the like, or an optional combination of these, and

ceramic containing these compounds of 50 wt% or more as its main ingredients, and furthermore ceramic having an oxide of lanthanum, calcium, strontium, molybdenum, tungsten, barium, niobium, zinc, manganese, nickel or the like, or some combination of these or other compounds and the like properly added to said ceramic.

[0041.1] For example, in case of a two-component system nPMN-mPT (n and m are represented in molar ratio) of magnesium lead niobate (PMN) and lead titanate (PT), when the molar ratio of PMN is made large, its Curie point is lowered and its relative dielectric constant at a room temperature can be made large. Particularly, the condition of "n = 0.85 to 1.0, m = 1.0 - n" preferably makes ~~preferably~~ a relative dielectric constant of 3000 or more. For example, the condition of "n = 0.91, m = 0.09" gives a relative dielectric constant of 15,000 at a room temperature and the condition of "n = 0.95, m = 0.05" gives a relative dielectric constant of 20,000 at a room temperature.

[0041.2] Next, in a three-component system of magnesium lead niobate (PMN), lead titanate (PT) and lead zirconate (PZ), it is preferable for the purpose of making the relative dielectric constant to make the composition of the three-component system close to the composition of the vicinity of the morphotropic phase boundary (MPB) between a tetragonal system and a pseudo-tetragonal system or between a tetragonal system and a rhombohedral system as a manner other than making the molar ratio of PMN be large.

[0041.3] Particularly preferably, for example, the condition of "PMN : PT : PZ = 0.375 : 0.375 : 0.25" provides the relative dielectric constant of 5,500 and the condition of "PMN : PT : PZ = 0.5 : 0.375 : 0.125" provides ~~the~~ a relative dielectric constant of 4,500. Further, it is preferable to improve the dielectric constant by mixing these dielectrics with such metal as platinum within a range where the insulation ability is secured. In this case, for example, the dielectric is mixed with platinum of 20% in weight.

Please amend paragraph [0042] as follows:

[0042] In this embodiment, the driving electrode 2 has an angular part with an acute angle. A pulse voltage is applied to the driving electrode 2 from ~~an~~ a not shown power source, and electrons are emitted mainly from the angular part. In order to perform a good electron emission, the width Δ of the slit between the driving electrode 2 and the common electrode 3 is preferably not more than 500μm. The driving electrode 2 is composed of a conductor with resistance to a high-temperature oxidizing atmosphere, for example, a single metal, an alloy, a mixture of an insulating ceramic and a single metal, a mixture of an insulating ceramic and an alloy or the like, and is preferably composed of a high-melting point precious metal such as platinum, palladium, rhodium, molybdenum or the like, or a material having such an alloy as silver-palladium, silver-platinum, platinum-palladium or the like as its main ingredient, or a cermet material of platinum and ceramic. More preferably, it is composed of only platinum or a material having a platinum-based alloy as its main ingredient. And as a material for electrodes, carbon-based or graphite-based materials, for example, a diamond thin film, a diamond-like carbon and a carbon nanotube are also preferably used. A ceramic material added to the electrode material is preferably 5 to 30 vol%.

Please amend paragraph [0051] as follows:

[0051] And its crystal phase can be made into a mixed phase of "cubic system + monoclinic system~~",~~," a mixed phase of "tetragonal system + monoclinic system~~",~~," a mixed phase of "cubic system + tetragonal system + monoclinic system" or the like, and among them particularly the crystal phase having a tetragonal system or a mixed phase of "tetragonal system + cubic system" as its main crystal phase is optimal from the viewpoint of strength, toughness and durability.

Please amend paragraph [0069] as follows:

[0069] An electrophoresis method can form a film in a high density under a high shape control, and has features as described in technical papers "DENKI KAGAKU

(ELECTROCHEMISTRY) 53, No.1 (1985), pp.63-68 by Kazuo Anzai" and "First Study Meeting On Method For High Order Forming Of Ceramic By Electrophoresis, Collection of Papers (1998), pp.5-6 and pp.23-24~~"~~<u>."</u> Therefore, it is preferable to properly select and use a technique from various techniques in consideration of required accuracy, reliability and the like.

Please amend paragraph [0077] as follows:

[0077] In case of making the voltage V1 to be applied to a signal voltage source 65 <u>to</u> be -400 V, the capacity of the capacitor 66 <u>to</u> be 500 pF, the bias voltage <u>to</u> be 0 V, the width of a slit formed by the driving electrode 63 and the common electrode 64 <u>to</u> be 10μm, and the degree of vacuum inside the vacuum chamber 62 <u>to</u> be 1 X 10^{-3} Pa, the current I_1 flowing through the driving electrode 63 becomes 2.0 A and the density of a collector current Ic taken from the electron capturing electrode 67 becomes 1.2 A/cm^2. As a result, according to an electron-emitting element of the present invention, a higher current density is obtained at a lower voltage and a lower degree of vacuum in comparison with a conventional electron-emitting element, and as a result an excellent straight advancing ability is displayed. As shown in Figure 7B, the collector current Ic becomes larger as the bias voltage Vb becomes higher.

Please amend paragraph [0079] as follows:

[0079] In case of making the voltage V1 to be applied to a signal voltage source 78 <u>to</u> be -400 V, the capacity of the electric field applying portion 76 acting as a capacitor <u>to</u> be 530 pF, the width of a slit formed by the driving electrode 73 and the common electrode 74 <u>to</u> be 10μm, and the degree of vacuum inside the vacuum chamber 72 <u>to</u> be 1 X 10^{-3} Pa, the current I_1 flowing through the driving terminal electrode 75 becomes 2.0 A and the density of a collector current Ic taken from the electron capturing electrode 77 becomes 1.2 A/cm^2. As a result, according to another electron-emitting element of the present invention, a higher current density is obtained at a lower voltage and a lower degree of vacuum in comparison with a conventional electron-emitting element, and as a result an excellent straight advancing ability is

displayed. The waveforms of the voltage V_1, and the currents Ic, I_1 and I_2 are respectively shown by curves a to d in Figure 8B.

Please amend paragraph [0083] as follows:

[0083] Figure 10 is a diagram showing the relation between the relative dielectric constant of an electron-emitting element according to the present invention and an applied voltage to it, and Figure 11 is a diagram for explaining it. The characteristic of Figure 10 shows the ~~relation~~ relationship between the relative dielectric constant of an electric field applying portion and the applied voltage required for emission of electrons in case that each of the widths d1 and d2 of slits formed by a driving electrode 91 and common electrodes 92a to 92c as shown in Figure 11 is 10μm.

Please amend paragraph [0088] as follows:

[0088] The driving electrode 102 and the common electrode 103 each are an Au film of 3μm in thickness, and a carbon coating 104 (of 3μm in film thickness) is applied to these driving electrode 102 and common electrode 103 and the slit part therebetween. In case of making a voltage Vk to be applied to the signal voltage source 112 to be 25 V, making the capacity of the capacitor 113 to be 5 nF, making a bias voltage Vb to be 300 V, forming the electric field applying portion 101 out of an electrostrictive material of 14,000 in relative dielectric constant, making the width of a slit formed by the driving electrode 102 and the common electrode 103 to be 10μm, and making the degree of vacuum inside the vacuum chamber 111 to be 1 X 10^{-3} Pa, a current Ic flowing through the electron capturing electrode 114 becomes 0.1 A and a current of about 40% of a current I_1 (0.25 A) flowing through the driving electrode 102 is taken as an electron current, and a voltage Vs between the driving electrode 102 and the common electrode 103, namely, a voltage required for emission of electrons, becomes 23.8 V. As a result, according to the electron-emitting element shown in Figure 13, a voltage necessary for emission of electrons can be remarkably lowered. And the carbon coating 104 remarkably reduces ~~remarkably~~ the possibility that the driving electrode 102 and the common electrode 103 are damaged by collision of

electrons or ions, or by generation of heat. The waveforms of the current I_1 flowing through the driving electrode 102, the currents I_2, Ic flowing through the common electrode 103, and the voltage Vs are respectively shown by curves e to h in Figure 14B.

Please amend paragraph [0091] as follows:

[0091] A material for each of the driving electrode 102 and the common electrode 103 is Au, and in case of making a voltage Vk to be applied to the signal voltage source 212 to be 160 V, making the capacity of the capacitor 213 to be 5 nF, making the bias voltage Vb to be 300 V, forming the electric field applying portion 201 out of an electrostrictive material of 4,500 in relative dielectric constant, making the width of a slit formed by the driving electrode 202 and the common electrode 203 to be 10μm, and making the degree of vacuum inside the vacuum chamber 211 to be 200 Pa or less, a current Ic flowing through the electron capturing electrode 214 becomes 1.2 A and a current of about 60% of a current I_1 (2 A) flowing through the driving electrode 202 is taken as an electron current, and a voltage Vs between the driving electrode 202 and the common electrode 203, namely, a voltage required for emission of electrons, becomes 153 V. The waveforms of the currents I_1, I_2 and Ic, and the voltage Vs are respectively shown by curves i to l in Figure 16B.

Please amend paragraph [0096] as follows:

[0096] And since the electric field applying portion of the electron-emitting element according to the present invention can be formed without the need of ~~a~~ special processing, as required in case of forming an electron-emitting element of a Spindt type, and furthermore the electrodes and the electric field applying portion can be formed by a thick film printing method, an electron-emitting element according to the present invention and an FED using it can be manufactured in lower cost in comparison with those of the prior art.